

3/29/05

Compliance Information

TOWN OF TELLURIDE GREEN BUILDING CODE CHECKLIST FOR MULTI-RESIDENTIAL PROJECTS WITH DENSITY GREATER THAN A TRIPLEX

3/29/05

ENERGY EFFICIENCY

From the following category, choose 18 points.

Buildings consume 36% of all energy used in the U.S. This translates into over \$220 billion to heat, cool, and power our buildings. Energy consumption is also a major cause of acid rain, smog, and global warming. Saving energy allows individuals and communities to become less dependent on energy and less vulnerable to price fluctuations. In addition it grants the environment time to recover from damage caused by energy use and it lets future generations enjoy economic prosperity. The Town of Telluride has also identified energy efficiency as a tool for building affordable housing.

	I. ENERGY EFFICIENCY: MINIMUM REQUIREMENT			
1	Meet the TOT Prescriptive Energy Code (Required for ALL projects)			
	II. ENERGY EFFICIENCY: ENVELOPE			
2	Structure designed for passive solar heating (south facing glass 7-12% of heated floor area and include thermal mass when south glazing is over 7%)	4		Plans and Final Inspection
3	Sun tempered design (south facing glass 6-7% of heated floor area)	3		Plans and Final Inspection
4	Provide south roof area designed for future solar collector use (20° of south)	1		Plans and Final Inspection
5	Advanced sealing package in addition to basic sealing practices (seal at top and bottom plates, attic penetrations, corners and electrical/plumbing/mechanical penetrations)	2		Plans and Frame Inspection
6	Structure wrapped with an exterior air infiltration barrier to manufacturer's specifications	1		Frame Inspection
7	Sill plate sealed with foam sill sealer	1		
8	Insulated headers (80% minimum R-10)	2		Frame Inspection
9	R3.5 or better insulated exterior wall sheathing on 75% or more of the exterior wall	2		Frame Inspection
10	Energy heels of 6" or more on trusses	2		Frame Inspection
11	Blower door test with 0.35 ACH or less (0.40 ACH = 4pts, 0.45 ACH = 2pts)	2		Mechanical Engineer Stamped letter
12	Unvented crawlspace per ASHRAE 23.11 (where applicable)	2		Plans and Final
13	An exceptionally well insulated building with a total R-value 10% greater than the prescriptive energy code dictates.	3		Plans and Insulation
	III. ENERGY EFFICIENCY: MECHANICAL SYSTEMS			
14	Active solar heating system	5		Plans and Final
15	High efficiency furnace or boiler with sealed combustion air ($\geq 91\%$)	3		Final
16	Geothermal/Geoexchange heating and/or cooling system	4		Plans and Final
17	HVAC balancing report and duct leakage testing (reviewed by mechanical engineer)	3		Letter stamped by ME
18	HVAC equipment and duct sizing calculations using a computerized sizing method	2		Letter stamped by ME
19	Furnace centrally located (all duct runs reduces as much as possible)	1		Plans and Final
20	All ductwork joints and penetrations sealed with low toxic mastic	1		Frame
21	Whole house fan installed in lieu of air conditioning	1		Plans and Final
22	Ceiling fan installed	1		Final
23	Programmable thermostat with "fan-only" setting	1		Final
24	Air destratification systems other than fans	1		Final
	IV. ENERGY EFFICIENCY: WATER HEATING			
25	Solar water heating system (domestic hot water)	3		Plans and Final

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3/29/05

26	High efficiency hot water heater: Gas \geq .65 e.f. Electric \geq .95 e.f.	1		Final
27	Tank less water heater	2		Final
28	"On Demand" hot water switch	2		Plans and Final
29	Geothermal heating system	3		Plans and Final
30	Drain waste heat recovery system	3		Plans and Final
31	Side arm water heater served by the boiler	2		Plans and Final
32	Insulate hot water pipes to R-6 in unconditioned spaces	2		Frame
33	Insulate all hot water lines to all locations with R-3 or better insulation	1		Frame
34	Rough-in piping for future solar hot water heating	1		Frame
35	Insulate hot and cold pipes 8 feet from the water heater with R-6 insulation	1		Frame
36	Insulate under and around bathtubs with R-11 min.	1		Frame
	V. ENERGY EFFICIENCY: ELECTRICAL/APPLIANCES			
37	Solar-generated electric system: 1KW 1.5 KW 2 KW 2.5 KW or greater	2 3 5 6		Plans and Final with receipt/paperwork
38	Wind-generated electric system (20% or more of electrical needs)	5		Plans and Final
39	Purchase of 100% wind power through the local utility	3		Plans and letter from utility
40	In-floor heating system	2		Plans and Framing
41	20% of the light fixtures are non-incandescent or have compact fluorescent light bulbs installed	2		Final
42	No recessed lights in an exterior insulated ceiling	2		Final
43	Air-Loc, IC rated recessed light fixtures	1		Frame
44	Occupancy/motion sensors and automatic daylight dimming controls	1		Final
45	Dishwasher is an ENERGY STAR® labeled product	1		Final and Receipt
46	Refrigerator is an ENERGY STAR® labeled product	1		Final and Receipt
47	Any additional appliances with an ENERGY STAR® rating	1		Final and Paperwork
48	Horizontal axis clothes washer	1		Final
	Enter total Energy Efficiency points			18 Points Total

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3/29/05**

MATERIALS

From the following category, choose 25 points

The following section has been devised in order to help minimize the impact our buildings have on our environment and our fellow humans, by being conscious of the negative effects of our building materials. New materials are being developed that utilize our resources more effectively. There is greater consumer interest in materials that are renewable, biodegradable, low in embodied energy, and locally produced. This program strongly supports the concept of "Closing the Loop" by requiring recycling and encouraging the purchase of recycled and recyclable materials, and rapidly renewable resources. Products that avoid toxins or other emissions in their manufacturing, and that are safe to the workers manufacturing and handling them are encouraged. Products that reduce their environmental impact during construction, demolition or renovation, and products that save energy or water are given consideration throughout this section. Global warming (carbon dioxide, fossil fuel emission), and ozone depletion (CFC's, HCFC's) can also be partly attributed to the materials we use in our buildings.

	VI. MATERIALS: FOUNDATION			
49	Insulated Concrete Foundation system (100% of the foundation)	2		Plans and Foundation
50	Frost-protected shallow foundation (100% of the foundation)	2		Plans and Foundation
51	Insulated foundation with >R-13 (from footer to top of wall)	2		Plans and Foundation
52	Western coal fly ash concrete (15% min.)	2		Plans, Foundation, Receipt
53	Non-asphalt based damp proofing	1		Plans, Foundation, Receipt
	VII. MATERIALS: STRUCTURAL FRAME			
54	Structural insulated panels for 75% of walls or roofs (SIPS)	2		Plans and Frame
55	Alternative materials such as adobe, rammed earth, straw bale, etc.	12		Plans and Frame
56	Optimal value engineering (24"o.c. studs, 2-stud corners, efficient headers, stack floor joists over studs/single plates, build in 2' increments.)	2		Plans and Frame
57	Dimensional or engineered lumber from certified sustainable forest or (sh) sustainable harvested label: 50% of framing minimum.	2		Plans, Frame, Receipt
58	Engineered alternative replaces large dimension solid lumber (2x10 or greater) in 90% or more of the floor area. (i.e., trusses or composite joists)	1		Plans/Frame
59	Engineered alternative replaces large dimension solid lumber (2x10 or greater) in 90% or more of the roof structure. (i.e., trusses or composite rafters)	1		Plans/Frame
60	Engineered lumber products for beams	1		Plans/Frame
61	Engineered lumber products for headers (90%)	1		Plans/Frame
62	Finger-jointed plate material	1		Plans/Frame
63	Engineered plate material	1		Plans/Frame
64	Finger-jointed studs for 90% of wall framing	1		Plans/Frame
65	Composite engineered stud material for 50% of wall framing	1		Plans/Frame
66	Recycled content deck material (75%)	2		Plans/Frame
67	Recycled-content sheathing (minimum 50% pre or post-consumer)	1		Plans, Frame, Receipt

TOWN OF TELLURIDE GREEN BUILDING CODE CHECKLIST FOR MULTI-RESIDENTIAL PROJECTS WITH DENSITY GREATER THAN A TRIPLEX

3/29/05

68	Oriented Strand Board wall sheathing	1		Plans, Frame
69	Outdoor structures, decking and/or landscaping materials are recycled or from certified sustainable forest	1		Plans, Frame, Receipt
70	Salvaged, reclaimed or refurbished materials for at least 10% of the structural materials	3		Plans, Frame
71	Salvaged, reclaimed or refurbished materials for at least 5% of the structural materials	2		Plans/Frame
	VIII. MATERIALS SUB-FLOOR			
72	Natural cork or 100% recycled or reclaimed content underlayment	2		Plans, Frame
73	Alternative materials i.e., wheat stubble sheets used	2		Plans, Frame
	IX. MATERIALS WINDOWS			
74	Low-e windows rated at less than 0.37 U-value (100% of windows)	1		Final, Receipt
75	Replacement of single pane windows with double-glazed Low-e on remodels/restorations	1 ea.		Final, Receipt
76	Window overhangs designed to shade in summer but not in winter	2		Plans, Final
77	Devices to reduce heat gain and/or heat loss, i.e., exterior-mounted sunscreens, operable awnings, insulated window coverings.	2		Plans, Final
	X. MATERIALS: DOORS			
78	Exterior doors (includes door to unheated garage) insulated to R-5 or greater (100%)	1		Final
79	Recycled and/or recovered content doors (100%)	2		Final
80	All doors made from third-party certified sustainably harvested wood	2		Final, Receipt
	XI. MATERIALS: WALL FINISHES			
81	Fiber cement siding on 50% or more of the exterior wall	1		Plans, Final
82	Fiber cement fascia and soffit	1		Plans, Final
83	Wood siding is 100% from third party certified sustainably harvested sources (≥50% of exterior wall)	1		Plans, Final, Receipt
84	Recycled and/or recovered-content siding on 50% or more of the exterior wall	1		Plans, Final, Receipt
85	Recycled and/or recovered-content fascia, soffit or trim	1		Plans, Final, Receipt
86	Recycled and/or recovered content gypsum wallboard	1		Plans, Final, Receipt
	XII. MATERIALS: ROOF			
87	Minimum 30-year, Recycled-content roofing material (75% content for steel) (25% other.)	2		Final, Receipt
88	Shakes/shingles from a third-party certified sustainable forest	2		Final, Receipt
	XIII. MATERIALS: FINISH FLOOR			
89	Wood flooring from reused/recovered or re-milled sources	2		Final, Receipt
90	Wood flooring made from third-party certified sustainably harvested sources	2		Final, Receipt
91	Ceramic tile is 50% or more recycled-content	1		Final, Receipt
92	Bamboo or cork flooring in place of hardwood	2		Final, Receipt
	XIV. MATERIALS: CABINETRY AND TRIM			
93	100% agricultural waste or 100% recycled wood particleboard/MDF for cabinets	2		Final, Receipt
94	100% agricultural waste or 100% recycled wood particleboard /MDF for shelving/countertops	2		Final, Receipt
95	Finger-jointed and/or MDF trim	1		Final, Receipt
96	Recycled trim or cabinets (25% or greater)	2		Final, Receipt
	Enter total Materials points			25 Points Total

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3/29/05

	GREEN BUILDING CODE CHECKLIST	POINT VALUE	VALUE OF BUILDER'S SELECTED OPTIONS	DOCUMENTS REQUIRED (To be determined by the Building Official)
<p><u>Indoor Air Quality</u></p> <p>From the following, choose 10 Points</p> <p>Considering the average American spends 90% of his or her time indoors, the EPA's recent proclamation that "indoor air pollution in residences, offices, schools, and other buildings is widely recognized as one of the most serious potential environmental risks to human health", shouldn't be taken lightly. Indeed, the EPA lists poor indoor air quality as the fourth largest environmental threat nationwide. Over time, healthy indoor air quality as a green building issue grew in significance with the advent of airtight, energy-efficient homes which result in lower levels of fresh air intake, thus potentially leaving occupants of new housing more susceptible to rising pollutant levels from synthetic building materials, home furnishings, chemically-based cleaning products, mold toxins, and other sources. In addition, the lack of consideration for combustion appliances and moisture control in the home has contributed to the problem of poor indoor air quality. The primary indoor air contaminants can include (but are not limited to) varying amounts of radon, formaldehyde, particulate matter, biological and organic pollutants, carbon monoxide and other combustion byproducts. Eliminating these pollutants in the most effective way to improve indoor air quality.</p>				
	XV. HEATH AND SAFETY: INDOOR AIR QUALITY			
97	Radon mitigation system installed	2		Final, Receipt
98	Structure meets American Lung Association Health House standards	2		Final, Receipt
99	Heat recovery ventilator or air-to-air heat exchanger (recovers 60% of heat from exhausted air) sized by mechanical engineer	3		Final, Stamped letter from ME
100	Mechanical ventilation installed (15 cfm per person of outside air)	2		Final, Stamped letter from ME
101	Install a whole structure HEPA filter sized by mechanical engineer	2		Final, Stamped letter from ME
102	Furnace and/or dust-mounted air cleaner meeting ASHRAE standard 52.2	2		Final, Stamped letter from ME
103	Sealed combustion gas fireplace with outside combustion air	2		Final
104	Exhaust fan in garage on timer or wired to door opener	2		Final
105	Install one hardwired carbon monoxide detector in mechanical equipment area	2		Final
106	Provide range hood vented to the exterior	1		Final
107	Only low toxicity, solvent free adhesives used throughout (less than 150 grams/liter of VOC)	2		Final, Receipt
108	Solvent free low toxic wood floor finish	2		Final, Receipt
109	Solvent free low toxic woodwork finishes	2		Final, Receipt
110	All surfaces of any particle board is painted with water-based sealer	1		Final, Receipt
111	All paints and finishes shall have Zero VOC content.	3		Final, Receipt
	All paints have Zero VOC content	2		
	All paints shall have low VOC content (less than 250 g/l VOC)	1		

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3/29/05

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	XVI: INDOOR AIR QUALITY: MATERIALS			
112	Zero formaldehyde oriented strand board sheathing	3		Plans, frame, Receipt
113	Formaldehyde-free particle board/MDF used for cabinets	4		Final
114	Formaldehyde-free particle board/MDF used for shelving/countertops	3		Final, Receipt
115	Oriented strand board (OSB) (100% of sub-floor)	2		Plans, frame
116	Zero formaldehyde OSB used in subfloor	4		Plans, Frame, receipt
	XVII. INDOOR AIR QUALITY: INSULATION			
117	Blown cellulose insulation in walls and/or ceiling	3		Insulation, Receipt
118	Non-toxic spray foam insulation (water-based)	5		Insulation, Receipt
119	>75% Recycled-content for 70% of insulation i.e., newsprint, wood fiber, cotton, mineral wool, etc.	2		Insulation, Receipt
120	>25% Recycled-content for 70% of insulation	1		Insulation, Receipt
121	HCFC-free rigid foam insulation	1		Insulation, Receipt
122	100% formaldehyde-free insulation used throughout the house	2		Insulation, Receipt
	XVIII. INDOOR AIR QUALITY: FLOORING			
123	Natural fiber carpet made with natural latex rather than SB (synthetic butadiene) latex backing	6		Final, Receipt
124	Natural linoleum in place of any vinyl sheet flooring or vinyl composition tile with low toxic adhesives	4		Final, Receipt
125	Natural or recycled-content carpet pad made from textile, carpet, carpet cushion or tire waste	2		Final, Receipt
126	Recycled-content carpet, tacked or low toxic adhesive (>25% recycled material)	2		Final, Receipt
127	Stone or Ceramic tile installed with low toxic adhesives and plasticiser-free grout	3		Final, Receipt
	Enter total Indoor Air Quality points			10 Points Total

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3/29/05

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<h2 style="margin: 0;"><u>RESOURCE CONSERVATION</u></h2> <p style="margin: 10px 0;">From the following category, choose 12 Points</p> <p style="margin: 10px 0;">Even without the severe drought conditions that have recently impacted many regions of the country, there are strong environmental and economic advantages in developing water conservation standards in new home construction. The Interior West, for example, is consistently vulnerable to weather variations, including low rainfall (Colorado averages only 14 inches per year) and reduced snow pack. It is for this reason that green building programs around the country promote water conservation in both indoor water use and outdoor landscaping.</p> <p style="margin: 10px 0;">A typical new home creates anywhere from 3.0 to 5.2 pounds of waste per square foot, and that roughly 80% of a homebuilder's waste stream is recyclable. The primary components of this waste stream are wood, drywall, cardboard, metals and other materials. The minimization of construction waste through strategies that prevent the generation of waste at its source can provide significant cost savings to both the builder and solid waste management agencies.</p>				
	XIX. RESOURCE CONSERVATION: LAND USE			
128	Save and reuse all site topsoil	2		Final, Receipt
	XX. RESOURCE CONSERVATION: WASTE REDUCTION			
129	Construction debris recycled: 75% of all wood scrap 90% of all metal scrap 95% of all cardboard	2 2 2		Receipt
130	Built-in kitchen recycling center with two or more bins	1		Final
131	Deconstruction materials sold or donated for resale (doors, windows, cabinets, plumbing fixtures, etc.)	2		Receipt
132	Provide storage for recycling on site (relative to use and size of project)	2		Plan, Final
133	Provide storage for bicycles (relative to the number of bedrooms/units)	2		Plan, Final
	XXI. RESOURCE CONSERVATION: WATER			
134	Clothes washer is an ENERGY STAR® labeled product	1		Final, Paperwork
135	Dual-flush toilets	2		Final, Paperwork
136	Composting toilets	2		Final, paperwork
137	Bathroom faucets fitted with aerator restricting flow to 1.8 gpm	1		Final, Paperwork
138	Kitchen faucet fitted with aerator restricting flow to 2.0 gpm	2		Final, Paperwork
139	Installed irrigation system includes a soil moisture or rain sensor, or other irrigation efficiency device	2		Final, Paperwork
140	Installed irrigation system is zoned separately for turf and bedding areas	2		Final, Paperwork

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3/29/05

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141	Non-potable water used for irrigation	2		Final, Paperwork
142	Installed bedding areas are mulched to a depth of 3"	2		Final, Paperwork
143	Permeable materials comprise 40% of areas for all walkways, patios and driveways	2		Final, Paperwork
144	Rainwater harvested and directed toward landscaping needs where practical	2		Final, Paperwork
145	Alternative fuel infrastructure for vehicle use 10%-25% of gallons used 25%-50% of gallons used 50%-75% of gallons used 75%-100% of gallons used	2 pts. 3 pts. 4 pts. 5 pts.		Paperwork
146	Innovative points and new technologies, up to 4 points per item, and up to 5 items.	2		Final
	Enter total Resource Conservation points			12 Points total
	ENTER YOUR CUMULATIVE TOTAL			

Green Star

Those projects that exceed the requirements of the Smart Code by 200% will receive a GREEN STAR Certification. This classification will recognize exemplary green building practices

Wind Power

If a project falls short of anticipated points at the end of the process, that difference can be made up by purchasing additional wind power. As described under point # 39, purchasing wind power for 100% of the estimated electricity consumed for one year will earn 3 points.